SUPER●®

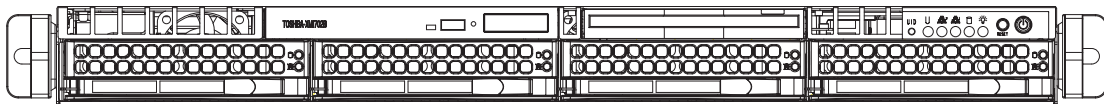## SUPERSERVER 5015B-UR
SUPERSERVER 5015B-U
SUPERSERVER 5015B-NTR
SUPERSERVER 5015B-NT

USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT is a high-end server based on the SC815TQ-R450U/SC815TQ-560U 1U rackmount chassis and the Super X7SBU single processor serverboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X7SBU serverboard and the SC815TQ-R450U/SC815TQ-560U chassis, which comprise the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X7SBU serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC815TQ-R450U/SC815TQ-560U server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply modules and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: POST Error Beep Codes

Appendix B: Installing the Windows OS

Appendix C: System Specifications

Notes

Table of Contents

Chapter 1

Introduction

1-1   Overview

The SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT is a high-end server comprised of two main subsystems: the SC815TQ-R450U (5015B-UR/5015B-NTR)/ SC815TQ-560U (5015B-U/5015B-NT) 1U server chassis and the X7SBU single processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the 5015B-UR/5015B-U/5015B-NTR/5015B-NT, as listed below:

●   One (1) slim DVD-ROM drive [DVM-PNSC-824(B)]

●   Three (3) sets of 4-cm counter-rotating fans, 5015B-U/NT (FAN-0086L)

●   Four (4) sets of 4-cm counter-rotating fans, 5015B-UR/NTR (FAN-0086L)

●   One (1) DVD cable (CBL-0139L)

●   One (1) passive CPU heatsink (SNK-P0016P)

●   Riser Cards: (see Section 5-6 for details)
      One (1) RSC-R1UU-E8R+ for low-profile PCI-E card
      One (1) RSC-R1UU-UE8 for UIO & PCI-E card (5015B-UR/5015B-U only)
      One (1) RSC-R1UU-2E8 for two PCI-E cards (5015B-NTR/5015B-NT only)

●   SATA Accessories
      One (1) SATA backplane (BPN-SAS-815TQ)
      One (1) SAS iPASS cable (CBL-0188L) (5015B-UR/5015B-U only)
      Four (4) SAS/SATA drive carriers (MCP-220-00001-01)
      One (1) SATA cable (CBL-0189L) (5015B-NTR/5015B-NT only)
      One (1) SGPIO cable (CBL-0157) (5015B-NTR/5015B-NT only)

●   One (1) rackmount kit (CSE-PT51L)

●   One (1) CD containing drivers and utilities

●   SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT User's Manual

1-2   Motherboard Features

At the heart of the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT lies the X7SBU, a single processor motherboard based on Intel's X48 chipset. Below are the main features of the X7SBU (see Figure 1-1 for a block diagram of the chipset).

Processors

The X7SBU supports a single Intel Xeon LGA-775 3200/3000 series processor at a FSB speed of 1600/1333/1066/800 MHz. Please refer to the motherboard description pages on our web site for a complete listing of supported processors.

Memory

The X7SBU has four DIMM sockets that can support up to 8 GB of unbuffered/non-ECC DDR3-1333/1066/800 or up to 4 GB of non-ECC DDR3-1600 XMP memory. The memory is an interleaved configuration, which requires modules of the same size and speed to be installed in pairs. Please refer to Chapter 5 for memory speed jumper settings.

UIO (5015B-UR/5015B-U)

The X7SBU is a specially-designed motherboard that features Supermicro's UIO (Universal I/O) technology. UIO motherboards have a PCI-Express x8 connector that can support any one of several types of UIO card types to add SAS ports, additional LAN ports, etc. to the motherboard. This allows the user to tailor the motherboard to their own needs. Note: the 5015B-UR/5015B-U does not come with a UIO card installed.

Serial ATA

An on-chip (ICH9R) SATA controller is integrated into the X7SBU to provide a six-port, 3 Gb/sec Serial ATA subsystem, which is RAID 0, 1, 5 and 10 supported. The SATA drives are hot-swappable units. Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the Serial ATA drives. Documentation on RAID setup guidelines can be found on our web site.

Onboard Controllers/Ports

One floppy drive controller and one onboard ATA/100 controller are provided to support up to two IDE hard drives or ATAPI devices. The color-coded I/O ports include one COM port, a VGA (monitor) port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports.

ATI Graphics Controller

The X7SBU features an integrated ATI video controller based on the ES1000 graphics chip. The ES1000 was designed specifically for servers, featuring low power consumption, high reliability and superior longevity.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3   Server Chassis Features

The 5015B-UR/5015B-NTR is built upon the SC815TQ-R450U chassis while the 5015B-U/5015B-NT is built upon the SC815TQ-560U chassis. The following is a general outline of the main features of both chassis.

System Power

The SC815TQ-R450U features a redundant 450W power supply consisting of two power modules. The system does not need to be shut down when replacing or removing a single power supply module.

The SC815TQ-560U features a single 560W power supply module. The system must be shut down when replacing or removing this power supply module.

SATA Subsystem

The SC815TQ-R450U/SC815TQ-560U chassis was designed to support four hot-swap SATA hard drives. Note: In the 5015B-NTR/5015B-NT, SATA drives are connected to the onboard SATA ports.

Note: for the 5015B-U/5015B-UR, a UIO SAS controller card is required to support SAS drives.

PCI Expansion Slots

5015B-UR/5015B-U: A riser card on the right side of the chassis can support one PCI-E x8 card (with a maximum length of 5.5"). The left side supports a UIO card and one PCI-E x8 card. These two systems can support four SAS/SATA drives with an optional UIO SAS card. See our web site for details (http://www.supermicro.com/products/nfo/UIO.cfm).

5015B-NTR/5015B-NT: A riser card on the right side of the chassis can support one PCI-E x8 card (with a maximum length of 5.5"). The left side supports two PCI-E x8

cards. See section 5-6 for details. (Right and left refer to the side when viewed from the front of the system. The 5015B-NTR/5015B-NT does not support a UIO card.)

Front Control Panel

The chassis' control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity (two) and UID/overheat/fan fail/power fail. A main power button and system reset button is also included.

I/O Backplane

The SC815TQ-R450U/SC815TQ-560U is an extended ATX form factor chassis that is designed to be used in a 1U rackmount configuration. Ports on the I/O backplane include one COM port, a VGA port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports. A UID (Unit Identifier) button and LED are also located beside the LAN2 Ethernet port.

Cooling System

The SC815TQ-R450U/SC815TQ-560U chassis has an innovative cooling design that features four sets of 4-cm counter-rotating fans located in the middle section of the chassis. There is a "Fan Speed Control Mode" setting in BIOS that allows chassis fan speed to be determined by system temperature. The power supply module also includes a cooling fan.

Figure 1-1. Intel X48 Chipset:
System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.
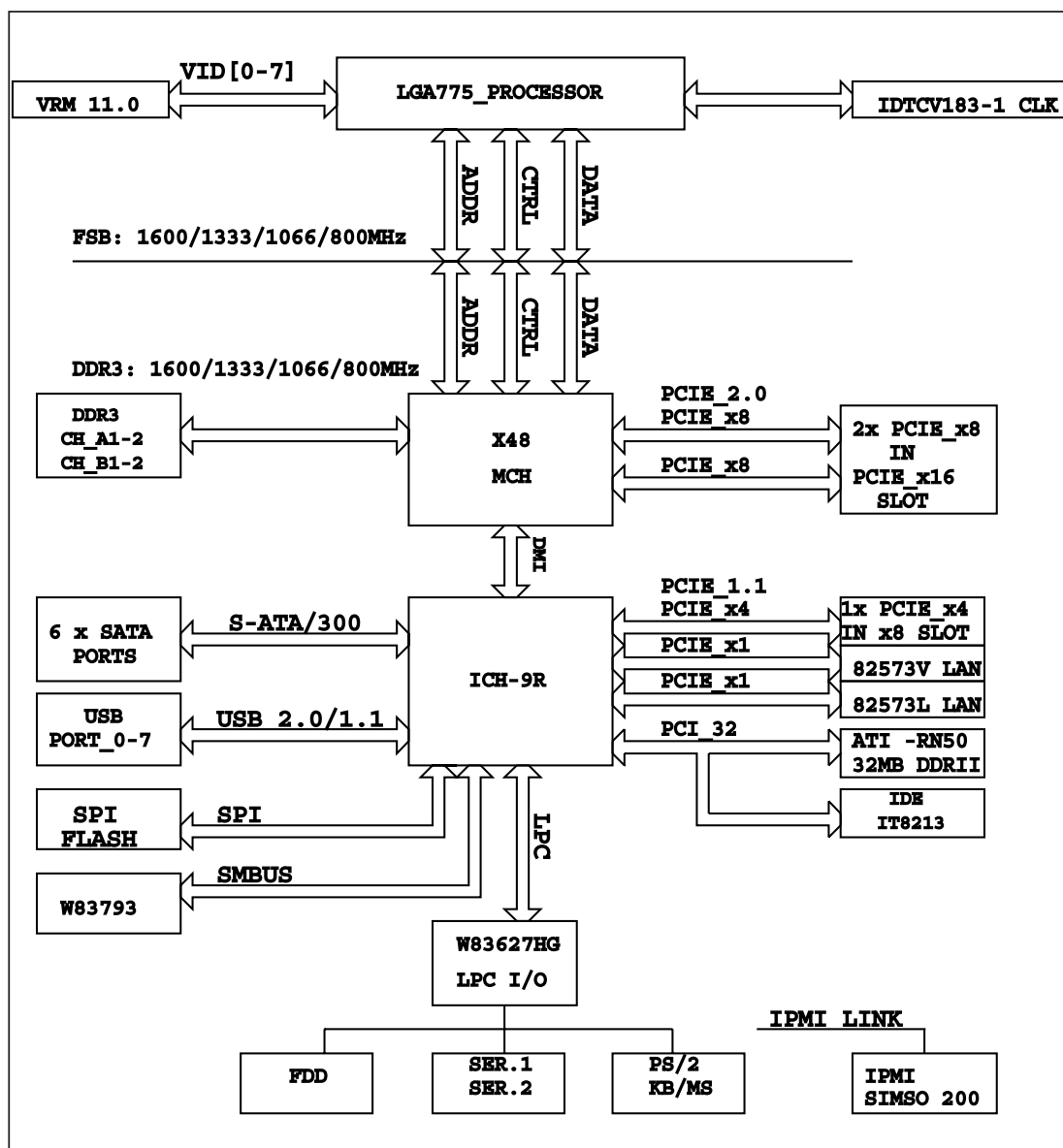
1-4   Contacting Supermicro

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Chapter 2

Server Installation

2-1   Overview

This chapter provides a quick setup checklist to get your SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2   Unpacking the System

You should inspect the box the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 5015B-UR/5015B-U/5015B-NTR/5015B-NT. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3   Preparing for Setup

The box the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.

- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow the hot plug SATA drives and power supply modules to cool before touch- ing them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating tempera- ture of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient tempera- ture (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connec- tions other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4   Installing the System into a Rack

This section provides information on installing the 5015B-UR/5015B-U/5015B-NTR/5015B-NT into a rack unit with the rack rails provided. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6.

There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself (see Figure 2-1). Two pairs of short brackets to be used on the front side of the outer rails are also included.

Installing the Inner Rails

Both the left and right side inner rails have been pre-attached to the chassis. Proceed to the next step.

**Figure 2-1. Identifying the Sections of the Rack Rails
(right side rail shown)**

Outer Rail (attaches to rack)

Inner Rail (pre-installed)

Locking Tab
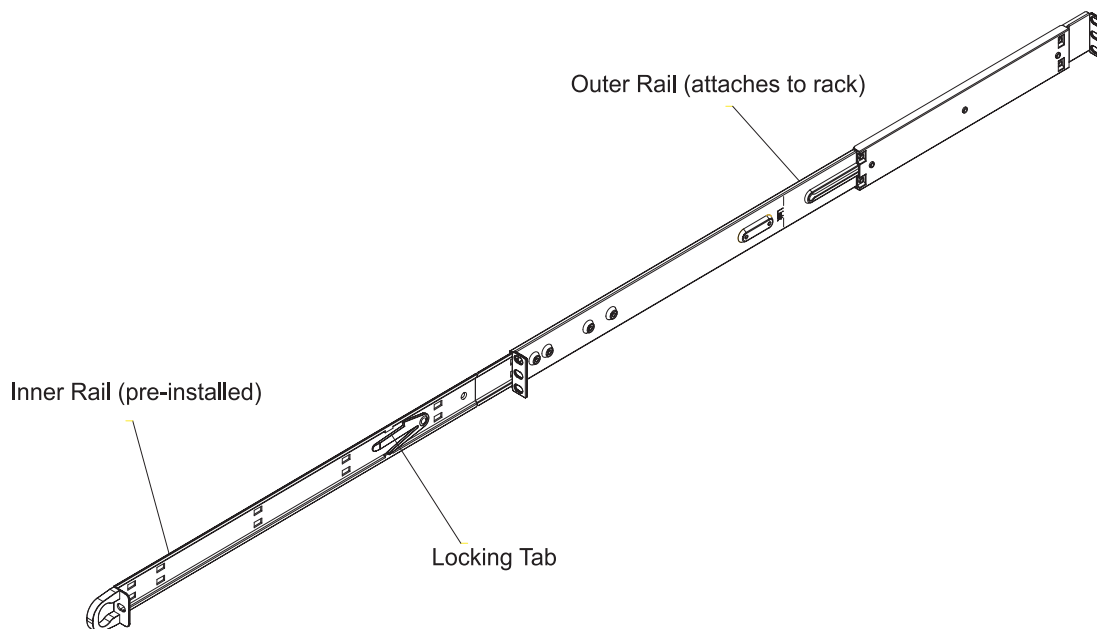
Installing the Outer Rails

Begin by measuring the distance from the front rail to the rear rail of the rack. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack. Secure the short bracket to the front side of the outer rail with two screws and the long bracket to the rear side of the outer rail with three screws. Repeat these steps for the left outer rail.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-2. Installing the Rack Rails
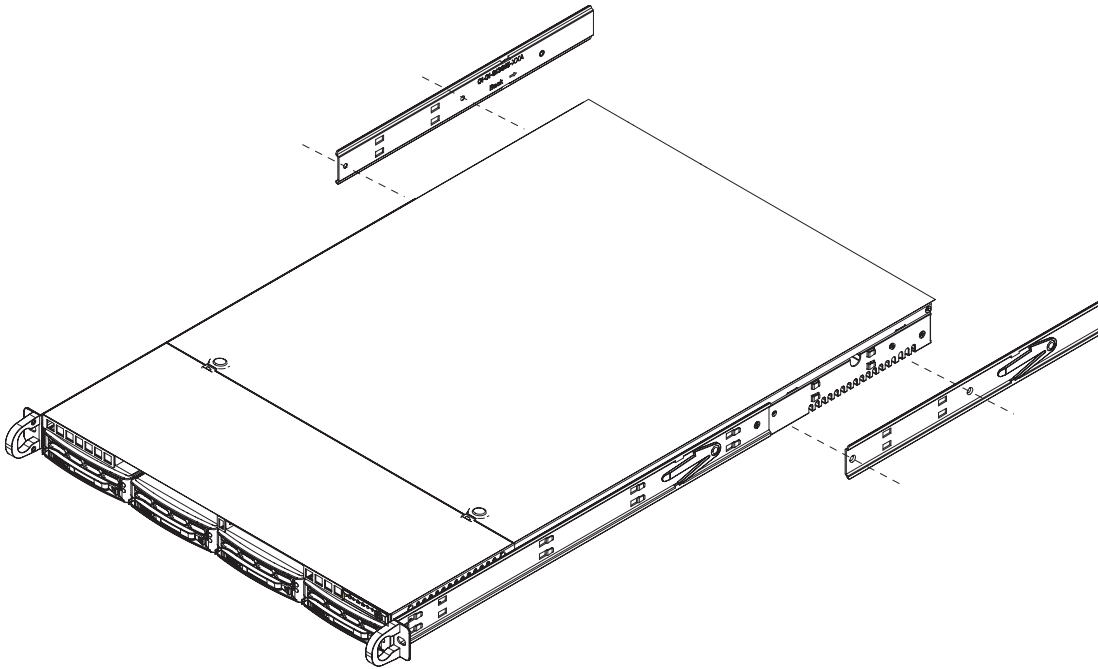
Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click".

Figure 2-3. Installing the Server into a Rack
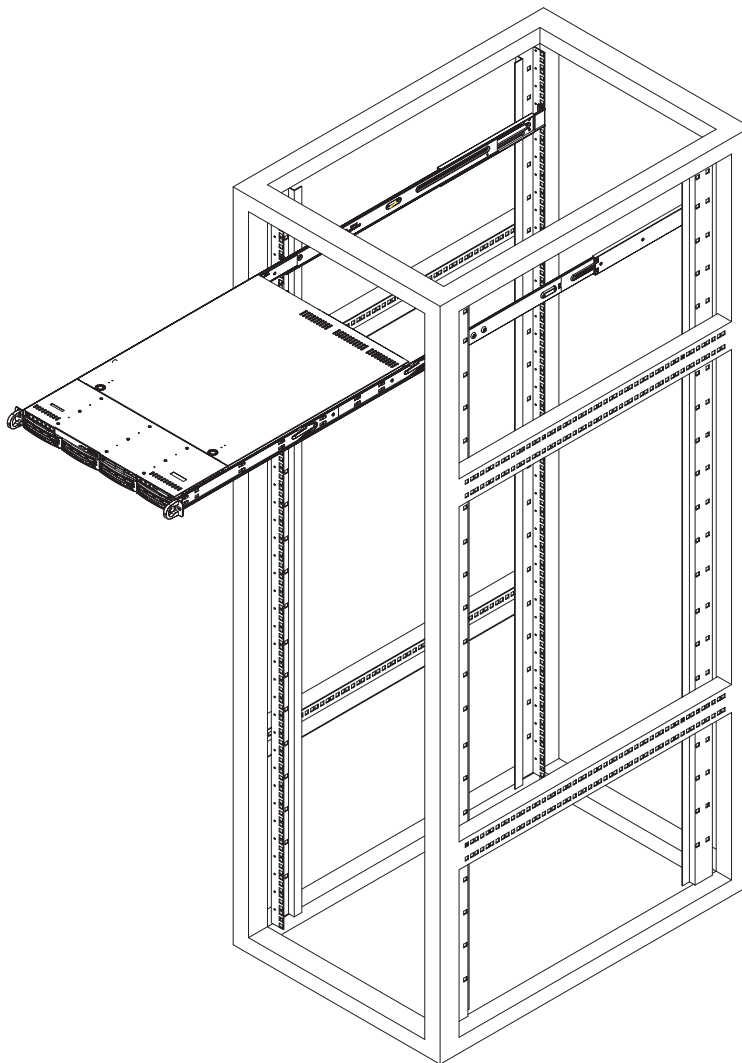
Installing the Server into a Telco Rack

To install the 5015B-UR/5015B-U/5015B-NTR/5015B-NT into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure 2-4. Installing the Server into a Telco Rack
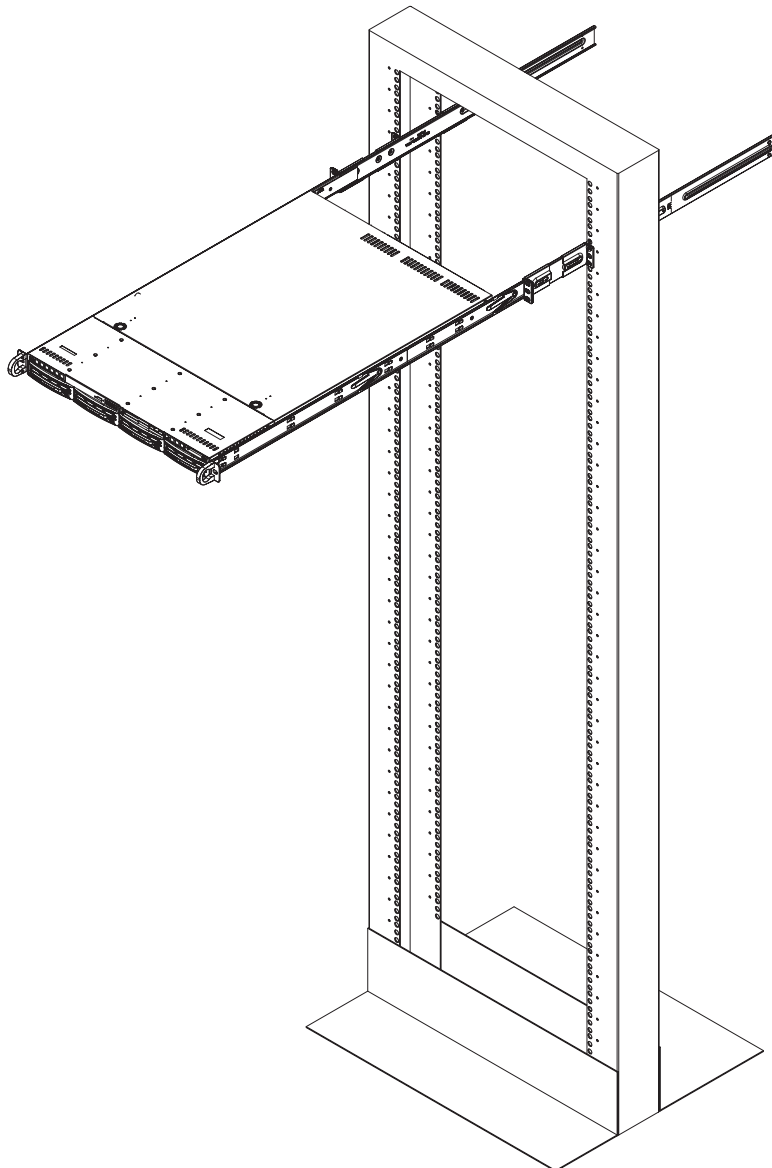
2-5   Checking the Motherboard Setup

After you install the 5015B-UR/5015B-U/5015B-NTR/5015B-NT in the rack, you will need to open the top cover to make sure the motherboard is properly installed and all the connections have been made.

Accessing the Inside of the System

1. First, grasp the two handles on either side and pull the system straight out until it locks (you will hear a "click").

2. Depress the two buttons on the top of the chassis to release the top cover (1).

3. Push the cover away from you (toward the rear of the chassis) until it stops (2). You can then lift the top cover from the chassis to gain full access to the inside of the server. See Figure 2-5.

4. To remove the system from the rack completely, depress the locking tabs in the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

Checking the Components

1. You may have one or two processors already installed in the motherboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

2. Your server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.
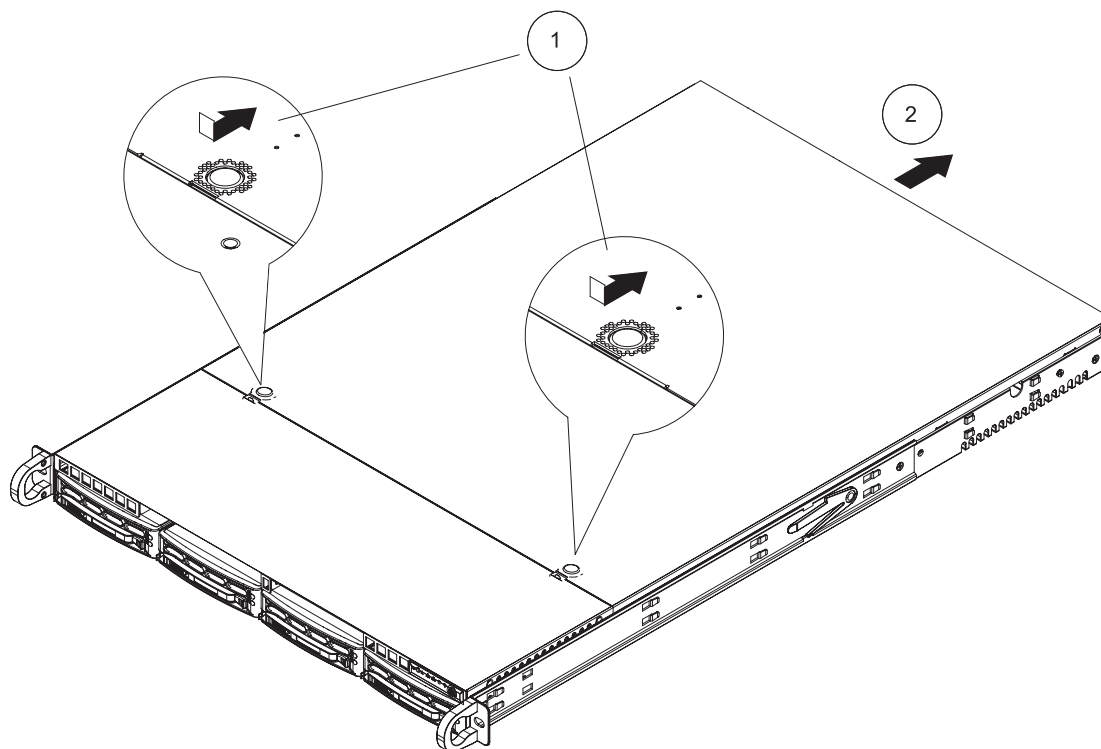
Figure 2-5. Accessing the Inside of the System

2-6   Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives and SATA backplane have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessable from the front of the server. For servicing the DVD-ROM and floppy drives, you will need to remove the top chassis cover. The SATA disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. A slim DVD-ROM and floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a DVD-ROM and/or floppy disk drive to the system.

3. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SATA drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by three or four (depending on model - see page 1-1) sets of 4-cm fans. Each set of fans consists of two fans that are mounted back to back. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing **Power**

1. The last thing you must do is to provide input power to the system. Plug the power cords from the power supply modules into a high-quality power strip that offers protection from electrical noise and power surges.

2. It is recommended that you use an uninterruptible power supply (UPS).

Chapter 3

System Interface

3-1   Overview

There are several LEDs on the control panel as well as others on the SATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2   Control Panel Buttons

There are three push-buttons located on the front of the chassis: a reset button, a UID button and a power on/off button.
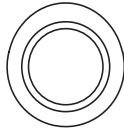
UID

Depressing the UID (unit identifier) button illuminates an LED on both the front and rear of the chassis for easy system location in large stack configurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function.

RESET
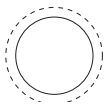
Reset

Use the reset button to reboot the system.

Power

The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3   Control Panel LEDs

The control panel located on the front of the SC815TQ-R450U/SC815TQ-560U chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Universal Information LED

When this LED blinks red quickly, it indicates a fan failure and when blinking red slowly a power failure. The LED will be blue when used for UID (Unit Identifier). When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists. See the table below for descriptions of the LED states.

Figure 3-1. Universal Information LED States

Universal Information LED States	
State	Indication
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID

Note: deactivating the UID LED must be performed in the same way it was activated. (If the UID LED was activated via IPMI, you can only turn the LED off via IPMI and not with the UID button.)

NIC2

Indicates network activity on LAN2 when flashing.

NIC1

Indicates network activity on LAN1 when flashing.

HDD

Indicates IDE channel activity. On the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT, this light indicates SATA and/or DVD-ROM drive activity when flashing.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 Hard Drive Carrier LEDs

Each hard drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the drive carrier indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED indicates two states. When blinking, it indicates the drive is rebuilding. When solid, it indicates a drive failure. If a drive fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Chapter 4

System Safety

4-1   Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the system clean and free of clutter.

- The 5015B-UR/5015B-U/5015B-NTR/5015B-NT weighs approximately 43/41 lbs (19.5/18.6 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit after ensuring that all connections have been made.

4-3   ESD Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the motherboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4   Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 5015B-UR/5015B-U/5015B-NTR/5015B-NT is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery

LITHIUM BATTERY

BATTERY HOLDER

OR

LITHIUM BATTERY

BATTERY HOLDER
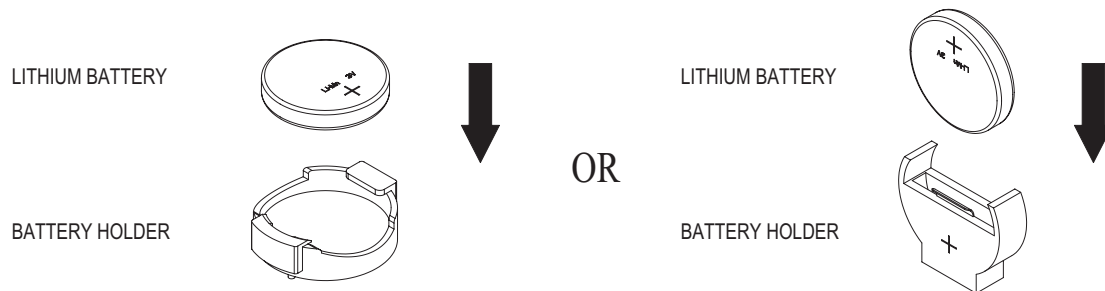
Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install processors and heatsinks to the X7SBU motherboard, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. <u>Remember to close the chassis completely when you have finished working on the motherboard to protect and cool the system sufficiently.</u>

5-1   Handling the Motherboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling.

The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing any board from its antistatic bag.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2   Processor and Heatsink Installation

> ⚠️ When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT! Always connect the power cord last and remove it first before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket *before* you install the heatsink and fan. The X7SBU can support either one or two Xeon processors. If installing one processor only, install it into CPU socket #1.

Notes:

1. Intel's boxed Xeon CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsinks and fans.

2. When purchasing a Xeon CPU or when receiving a motherboard with a CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

Installing the Processor

1. A black PnP cap is attached to the load plate to protect the CPU socket. Press the load lever down and away from the retention clasp to release the load plate from its locked position.

Load lever

PnP cap

2. Gently lift the load lever to open the load plate.

Load plate released
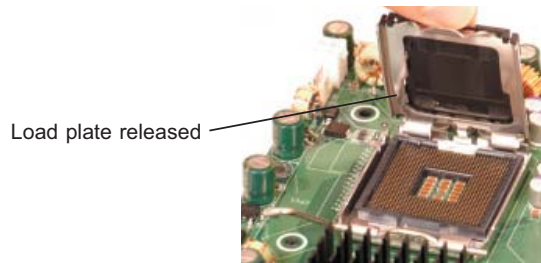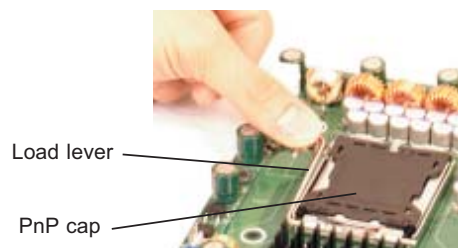
3. Use your thumb and index finger to hold the CPU at opposite sides.

4. Align pin1 of the CPU (the corner marked with a triangle) with the notched corner of the CPU socket.

5. Find the corner of the CPU that has a semi-circle cutout below a gold dot (CPU key). This corner should be aligned with the cutout on the socket (socket key).

6. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any sur- face or any of the contacts, which may damage the CPU and/or its contacts.

7. With the CPU in the socket, in- spect the four corners of the CPU to make sure that it is properly installed.

8. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

9. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Remove the cap. Repeat steps to install a second CPU if desired.

Gold dot
Socket key
CPU key
Notched corner
CPU pin 1

Load lever
CPU installed in socket
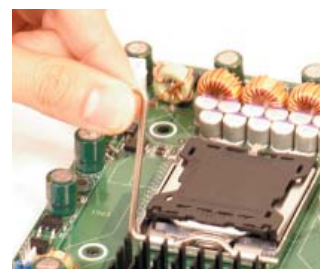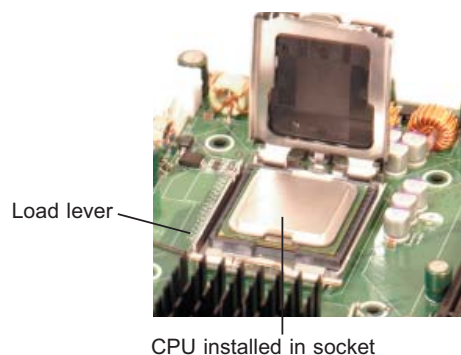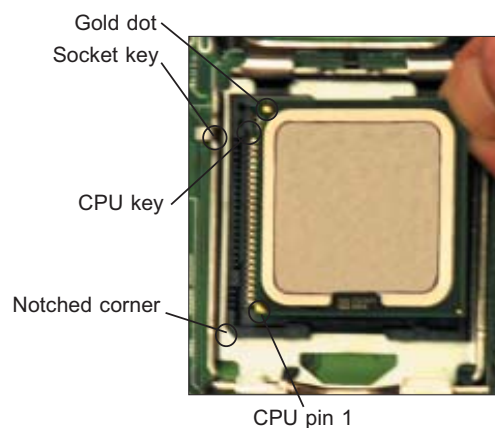
PnP cap released from load plate

Installing the Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (pre-installed) heatsink retention mechanism.

3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)

4. 4. Add the two remaining screws then finish the installation by fully tightening all four screws.

NO.1 SCREW   NO.4 SCREW

NO.3 SCREW   NO.2 SCREW
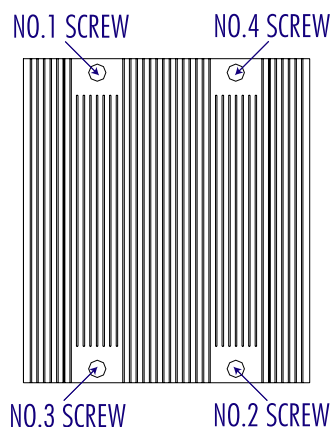
Removing the Heatsink

Warning! We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture above.

2. Hold the heatsink and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loose, remove it from the CPU.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the heatsink.

5-3   Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the motherboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables.

The following data cables (with their motherboard connector locations noted) should be connected.

See the motherboard layout diagram in this chapter for connector locations.

- DVD-ROM Drive cable (IDE)

- Control Panel cable (JF1, see next page)

- SATA cables, 5015B-NTR/5015B-NT only (SATA0 ~ SATA3)

- SGPIO cable, 5015B-NTR/5015B-NT only (T-SGPIO1 to SATA backplane)

Connecting Power Cables

The X7SBU has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to JPW1 to supply power to the motherboard. See the Connector Definitions section in this chapter for power connector pin definitions.

In addition, your power supply must be connected to the 8-pin Processor Power connector at JPW2.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

Figure 5-1. Front Control Panel Header Pins (JF1)

	20	19	
Ground	○	○	NMI
x (key)	○	○	x (key)
Power LED	○	○	Vcc
HDD LED	○	○	Vcc
NIC1	○	○	Vcc
NIC2	○	○	Vcc
OH/Fan Fail/UID LED	○	○	Vcc
Power Fail LED	○	○	Vcc
Ground	○	○	Reset
Ground	○	○	Power
	2	1	
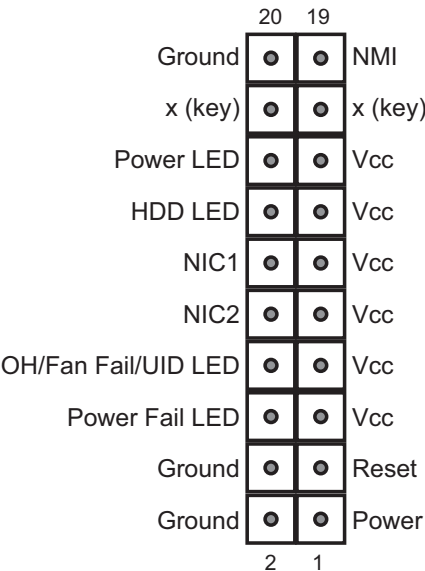
5-4   I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. Rear Panel I/O Ports

Mouse
(Green)

USB0/1 Ports

COM1 Port
(Turquoise)

VGA Port
(Blue)

LAN1   LAN2

UID

Keyboard
(Purple)
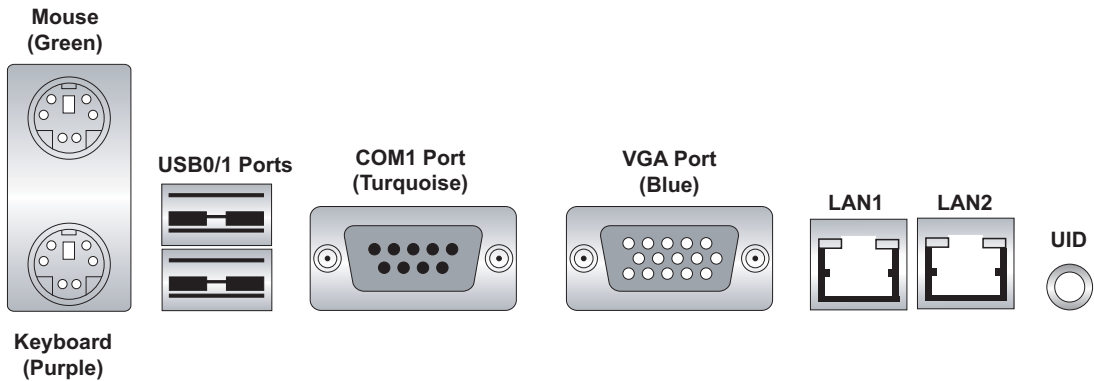
5-5   Installing Memory

Note: Check the Supermicro web site for recommended memory modules.

CAUTION

Exercise extreme care when installing or removing DIMM modules
to prevent any possible damage. Also note that the memory is inter-
leaved to improve performance (see step 1).

Installing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with slots DIMM1A and DIMM1B then slots DIMM2A and DIMM2B. The memory scheme is interleaved so you must install two modules at a time.

2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly. See Figure 5-5.

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support
The X7SBU supports up to 8 GB of unbuffered non-ECC DDR3-1333/1066/800 or up to 4 GB of non-ECC DDR3-1600 XMP SDRAM in two DIMM slots. Interleaved memory requires modules of the same size and speed to be installed in pairs. You should not mix DIMMs of different sizes and speeds.

Notes

1. Due to OS limitations, some operating systems may not show more than 4 GB of memory.

2. Both ECC and non-ECC memory can be installed.

3. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the Memory Availability Table below for details.)

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to System BIOS & OS applications		2.84

Figure 5-3. Installing DIMM into Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.
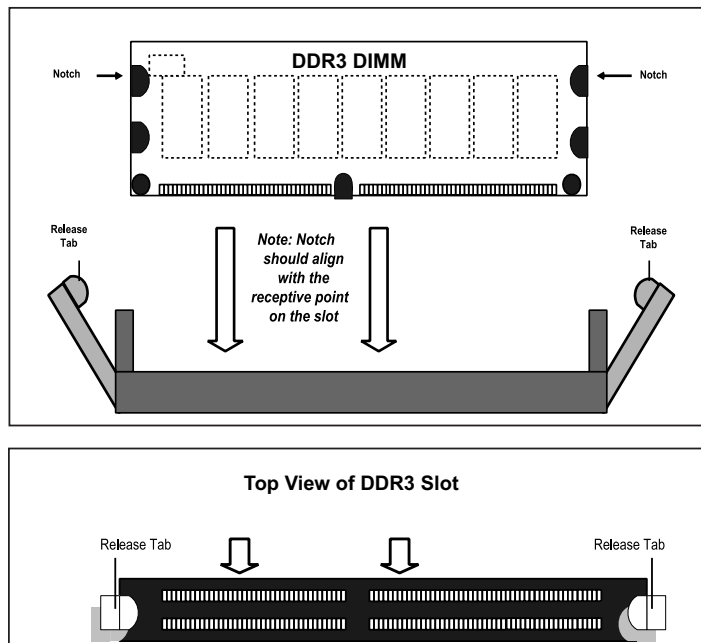
5-6   Adding PCI Cards

PCI Expansion Slots

Two riser cards are used to support add-on cards to the system. The SC815TQ-R450U/SC815TQ-560U chassis can accommodate one standard size (full height full length) and one low profile PCI expansion card. When viewed from the chassis front, the standard size card installs to the left and the low-profile card installs to the right side.

PCI cards are installed into riser cards that have been pre-installed to the system. An additional two riser cards are included to support PCI-E add-on cards. See configuration list below.

PCI Card Installation

Before installing a PCI add-on card, make sure you install it into the correct riser card. Begin by releasing the locking tab that corresponds to the slot you wish to populate. Insert the expansion card into the correct riser card, pushing down with your thumbs evenly on both sides of the card.

PCI Slot/Card Configurations

5015B-UR/5015B-U

Left Side Riser Card	*Expansion card supported*
CSE-R1UU-UE8 (pre-installed)	1x UIO card and 1x PCI-E x8 card
Right Side Riser Card	*Expansion card supported*
RSC-R1UU-E8R+ (pre-installed)	1x PCI-Express x8 card (maximum length of 5.5")

5015B-NTR/5015B-NT

Left Side Riser Card	*Expansion card supported*
CSE-R1UU-2E8 (pre-installed)	2x PCI-E x8 cards
Right Side Riser Card	*Expansion card supported*
RSC-R1UU-E8R+ (pre-installed)	1x PCI-Express x8 card (maximum length of 5.5")

5-7   Motherboard Details

Figure 5-4. SUPER X7SBU Layout
(not drawn to scale)
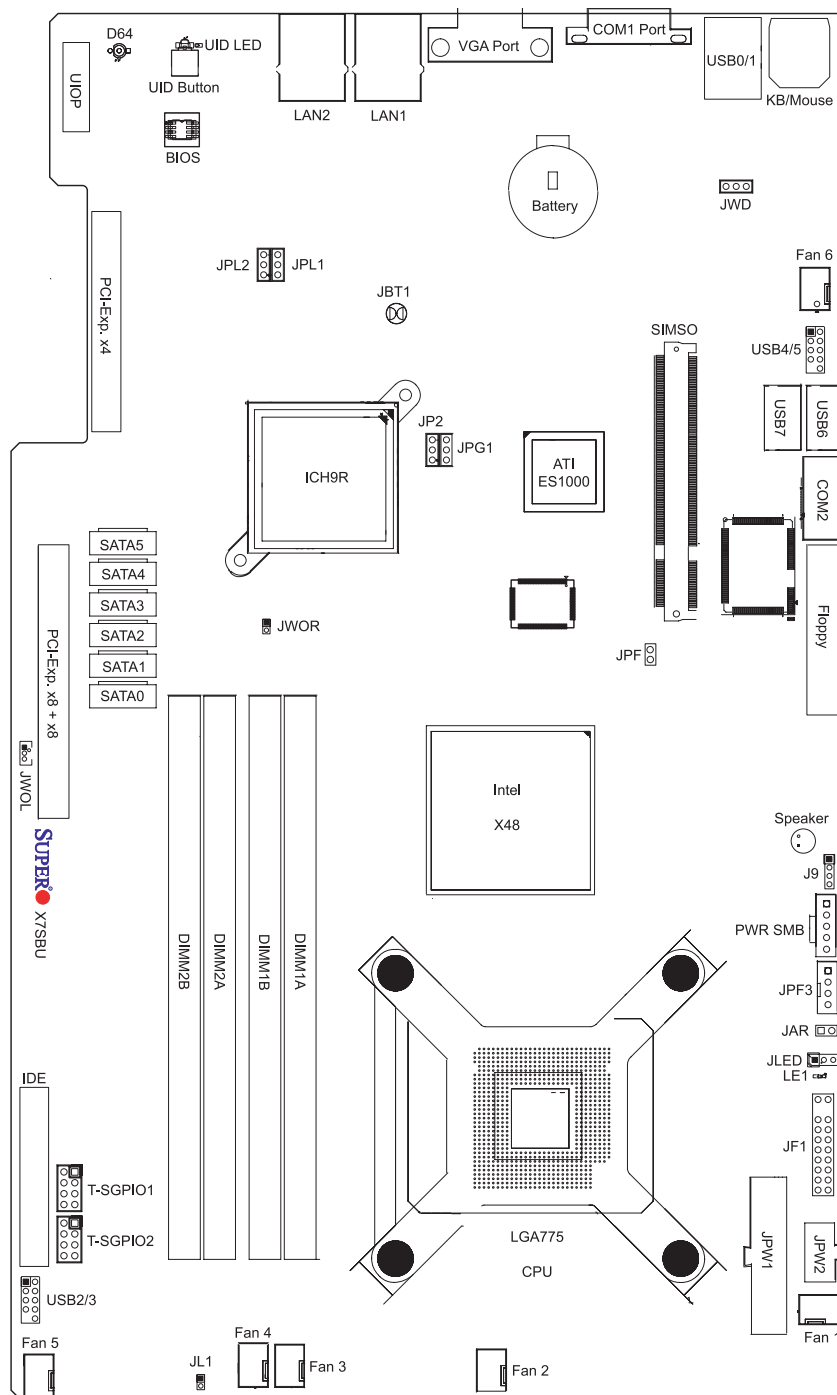
Notes:

Jumpers not noted are for test purposes only.

X7SBU Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 5-9)
JP2	IDE Enable	Pins 1-2 (Enabled)
JPF	Power Force On	Open (Normal)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	COM1/COM2 Serial Port/Header
FAN 1-6	Chassis/CPU Fan Headers
Floppy	Floppy Disk Drive Connector
IDE	IDE HDD Connector
J9	Speaker Connector
JAR	Alarm Reset Header
JF1	Front Panel Connector
JL1	Chassis Intrusion Header
JLED	Standby Power LED Header
JOH1	Overheat Warning Header
JPW1	24-pin Main ATX Power Connector
JPW2	8-pin Processor Power Connector
JWOL/JWOR	Wake-On-LAN Header/Wake-On-Ring Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
PWR_SMB	Power Supply SMBus Connector
SATA0 ~ SATA5	SATA Ports
SIMSO	SIMSO IPMI 2.0 Socket
T-SGPIO-1/T-SGPIO-2	Serial General Purpose Input/Output Headers
USB0/1	Rear I/O Universal Serial Bus (USB) Ports
USB2/3/4/5, USB6/7	Onboard USB Headers, Ports

Other	Description
D64	Onboard Power LED
LE1	Standby Power LED (for S1, S3 states)
LE2	UID (Unit Identifier) LED
SW1	UID (Unit Identifier) Button

5-8   Connector Definitions

ATX Power Connector

The primary ATX power supply con-
nector meets the SSI (Superset ATX)
24-pin specification. Make sure that
the orientation of the connector is
correct. See the table on the right for
pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Processor Power Connector

JPW2 must also be connected to the
power supply to provide power for the
processor(s). See the table on the
right for pin definitions.

Processor Power Pin Definitions (JPW2)	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

NMI Button

The non-maskable interrupt button
header is located on pins 19 and 20
of JF1. Refer to the table on the right
for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located
on pins 15 and 16 of JF1. Refer to the
table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	Vcc
16	Control

HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

Universal Information LED

Connect an LED to pins 7 and 8 of JF1 to provide advanced warning of chassis overheating or fan failure. These pins also work with the front UID indicator, which will activate as either a solid or flashing blue LED depending on whether the LED was activated via IPMI or the UID button. Refer to the tables on the right for pin definitions and status indicators.

Universal Info. LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Control

Red LED Indications	
State	Indication
Solid	Overheat
Blinking (fast)	Fan Fail
Blinking (slow)	Power Fail

Blue LED Indications	
State	Indication
Solid	UID (via Button)
Blinking	UID (via IPMI)

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located on the I/O backplane. USB0 is the bottom connector and USB1 is the top connector. Two additional ports are included onboard near the COM2 header. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1, USB6/7)			
USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

Universal Serial Bus Headers

Four additional USB headers (USB2/3 and USB4/5) are included on the motherboard. These may be used for front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Universal Serial Bus Headers Pin Definitions (USB2/3, USB4/5)			
USB2		USB3, USB4	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	NC

Serial Ports

The COM1 serial port is located on the I/O backplane. COM2 is a header on the motherboard (see motherboard layout for location). See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1, COM2)			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

Fan Headers

The X7SBU has six headers, designated Fan1 through Fan6. These 4-pin fan headers are for Pulse Width Modulated (PWM) fans and their speed is controlled via Thermal Management with a BIOS setting. See the tables on the right for pin definitions.

4-pin Fan Header Pin Definitions (FAN1-6)	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

Power LED/Speaker

On the J9 header, pins 1-4 are for an external speaker. See the table on the right for speaker pin definitions.

Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 3-4 with a jumper.

Speaker Connector Pin Definitions (J9)		
Pin #	Function	Definition
1	+	Speaker data (red wire)
2	Key	No connection
3		Key
4		Speaker data

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located beside the USB ports. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Ports Pin Definitions	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Overheat LED

Connect an LED to the JOH1 header to provide warning of a chassis overheating condition. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)	
Pin#	Definition
1	+5V
2	OH Active

Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a WOR card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)	
Pin#	Definition
1	Ground (Black)
2	Wake-up

SMB

The System Management Bus header (for the PCI bus) is designated SMB. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

SMB Header Pin Definitions (SMB)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

SMBUS_PS

This header is for I^{2}C, which may be used to monitor the status of the power supply. See the table on the right for pin definitions.

SMBUS_PS (I^{2}C) Pin Definitions	
Pin#	Definition
1	Clock
2	SMB Data
3	PWR Fail
4	Ground
5	+3.3V

LAN1/2 (Ethernet Ports)

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Unit Identifier Button

SW1 is a Unit Identifier (UID) button and is located next to LAN Port 2. When you push the UID button, both Rear UID and Front Panel UID Indicators will illuminate. Push SW1 again to turn off both Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

SGPIO

The two headers labeled T-SGPIO1 and T-SGPIO2 are for SGPIO (Serial General Purpose Input/Output). SGPIO provides a bus between the SATA controller and the SATA drive backplane to provide SATA enclosure management functions. Connect the appropriate cables from the backplane to the SGPIO1 and SGPIO2 headers to utilize SATA management functions on your system.

SGPIO Header Pin Definitions (T-SGPIO1, T-SGPIO2)			
Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

Note: NC indicates no connection.

Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Alarm Reset

The system will notify you with an alarm in the event of a power supply failure. Connecting a microswitch to this header allows you to disable the alarm. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this jumper to prevent false alarms. See the table on the right for jumper settings.

Alarm Reset Jumper Settings (JAR)	
Pin#	Definition
2	+5V
1	Ground

Standby Power LED Header

JLED is a header that can be attached to an external LED to provide indication of standby power (solid on indicates an S1 state and flashing indicates an S3 state).

Standby Power LED Header Pin Definitions (JLED)	
Pin#	Definition
1	+5V
2	Key
3	Ground

5-9   Jumper Settings

Explanation of Jumpers

To modify the operation of the mother-board, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.
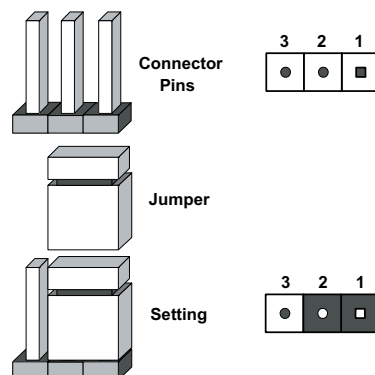
Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).

2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN Enable/Disable

Change the setting of jumper JPL1 or JPL2 to enable or disable the onboard Ethernet (RJ45) ports LAN1 and LAN2, respectively. See the table on the right for jumper settings. The default setting is enabled

LAN Enable/Disable Jumper Settings (JPL1/JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application is "hung up". Pins 1-2 will cause WD to reset the system if an application is hung up. Pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Note: When enabled, the user needs to write their own application software to disable the Watch Dog Timer.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Power Force On

Jumper JPF allows you to enable or disable the Power Force-On function. Closing this jumper will force the power to always stay on automatically. If this function is disabled (the normal setting), the user needs to press the power button to power on the system.

Power Force On Jumper Settings (JPF)	
Jumper Setting	Definition
Open	Normal
Closed	Force On

IDE Enable/Disable

JP2 is used to enable or disable the IDE connector. The default setting is enabled. See the table on the right for jumper settings.

IDE Enable/Disable Jumper Settings (JP2)	
Jumper Setting	Definition
Pins 1-2	IDE Enabled
Pins 2-3	IDE Disabled

5-10 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gigabit LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED Connection Speed Indicator	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

Onboard Power LED

The D64 LED located near the UIOP connector is the power LED. This LED Indicator is on when the system is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator (D64)	
LED State	Definition
Off	System Off
On	Standby Power On
Green	System On

Onboard Power LED

LE1 is used to indicate power standby states. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator (LE1)	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State
Green: Flashing Slowly	ACPI S3 (STR) State

UID LED

The LE2 LED located under SW1 is the UID indicator LED. LE2 illuminates when UID is initiated either by the UID button or via IPMI. If initiated a second time, LE2 will turn off.

When the LED blinks blue it means the signal was initiated via IPMI. If blue continuously it means the UID button initiated it.

UID LED Indicator (LE2)	
LED	Definition
Off	Normal
On	UID button depressed

5-11 Floppy, IDE and SATA Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.

- A red mark on a wire typically designates the location of pin 1.

- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is designated Floppy. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)			
Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

IDE Connector

There are no jumpers to con-figure the onboard IDE connec-tor. See the table on the right for pin definitions.

IDE Drive Connector Pin Definitions (IDE)			
Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

SATA Ports

See the table on the right for pin definitions for the onboard SATA ports.

SATA Port Pin Definitions (SATA0 ~ SATA5)	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

SIMSO

A SIMSO IPMI (Intelligent Plat-form Management Interface) 2.0 Socket is included on the motherboard.

5-12 Installing Drivers

After all the hardware and operating system have been installed, you need to install certain drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-4 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

Figure 5-4. Driver Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot the system be- fore moving on to the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC815TQ-R450U/SC815TQ-560U chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the next step.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1   Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing any board from its antistatic bag.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Figure 6-1. Chassis: Front and Rear Views

Slim DVD-ROM Drive   Slim Floppy Drive (optional)   System LEDs   Control Panel

Drive Bays   System Reset   Main Power

Power Supply Module   USB Ports   PCI Expansion Slots (w/ riser cards)

Mouse/Keyboard   COM1 Port   VGA Port   Ethernet Ports
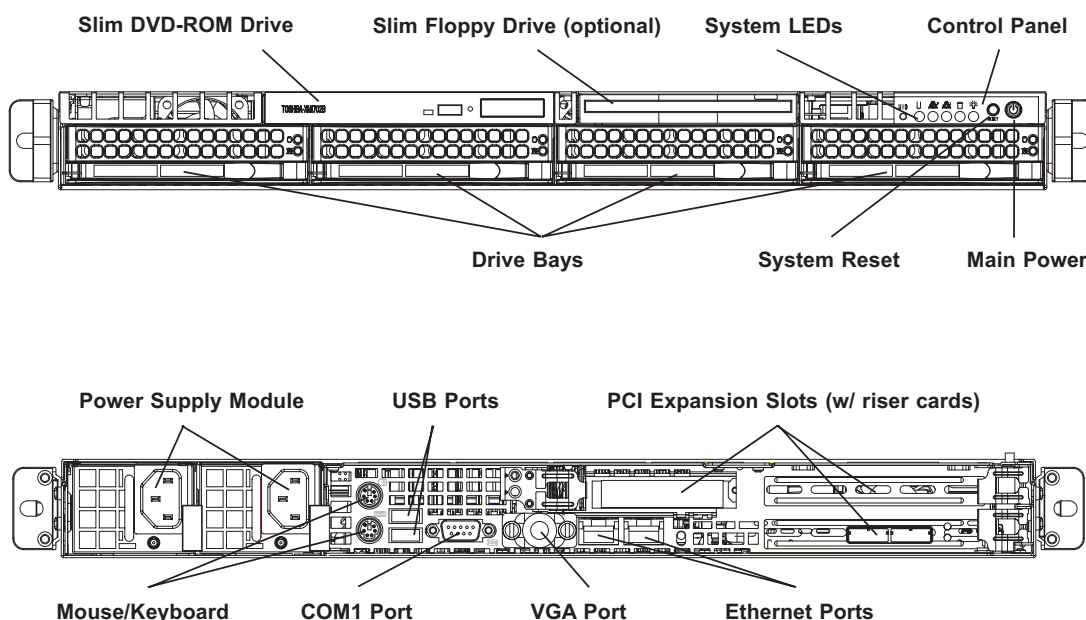
Note: the SC815TQ-560U chassis (5015B-U/5015B-NT) has only a single power supply module.

6-2   Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the motherboard to provide you with system status indications. These wires have been bundled together as a ribbon cable to simplify the connection.

Connect the cable from JF1 on the motherboard to the appropriate header on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Motherboard Setup."

6-3   System Fans

Four 4-cm heavy duty counter-rotating fans provide the cooling for the SuperServer 5015B-UR/5015B-U/5015B-NTR/5015B-NT. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fan will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

Remove the top chassis cover while the system is still running to determine which of the two fans has failed. Then power down the system before replacing a fan. Removing the power cords is also recommended as a safety precaution.

Replacing System Fans

1. After determining which fan has failed, turn off the power to the system.

2. Unplug the fan cable from the motherboard and remove the failed blower fan from the chassis.

3. Replace the failed fan with an identical 4-cm, 12 volt fan (available from Supermicro: p/n FAN-0086L).

4. Push the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

5. Reposition the fan housing back over the two mounting posts in the chassis, then reconnect the fan wires to the same chassis fan headers you removed them from.

6. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

Figure 6-2. System Cooling Fans
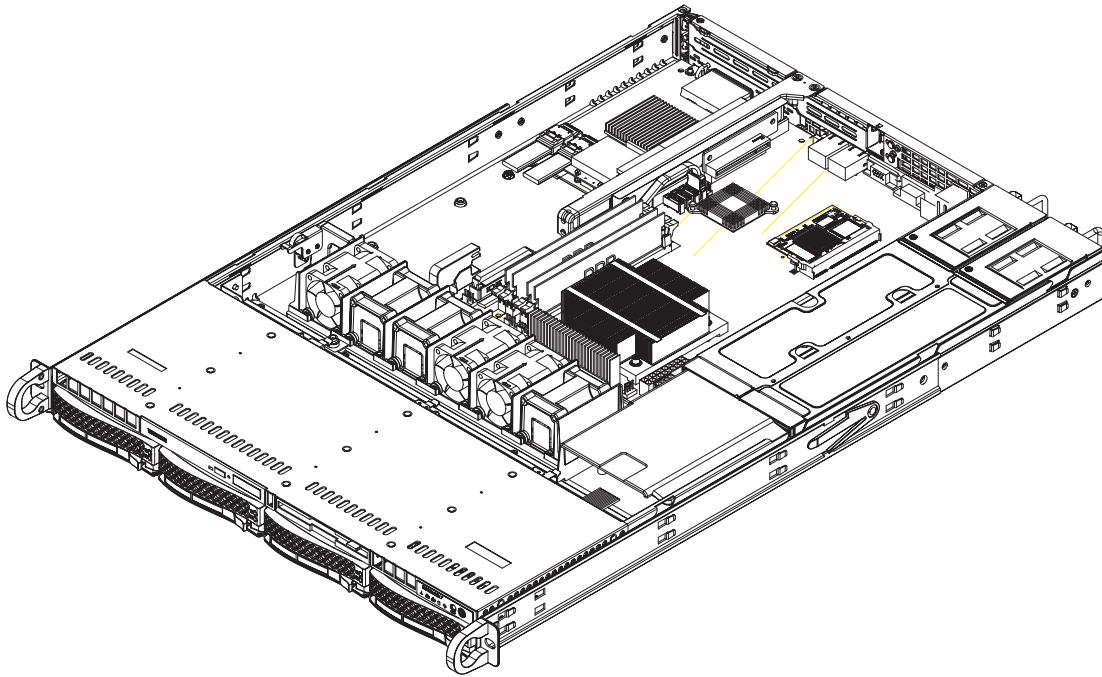
6-4   Drive Bay Installation/Removal

Removing the Front Bezel

If your system has a front bezel (optional) attached to the chassis, you must first remove it to gain access to the drive bays. To remove the bezel, first unlock the front of the chassis then press the release knob (see Figure 6-3). Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning. It is recommended that you keep a maintenance log of filter cleaning/replacement, since its condition will affect the airflow throughout the whole system.

Figure 6-3. Removing the Front Bezel

1. Unlock
2. Press release knob
3. Remove bezel assembly
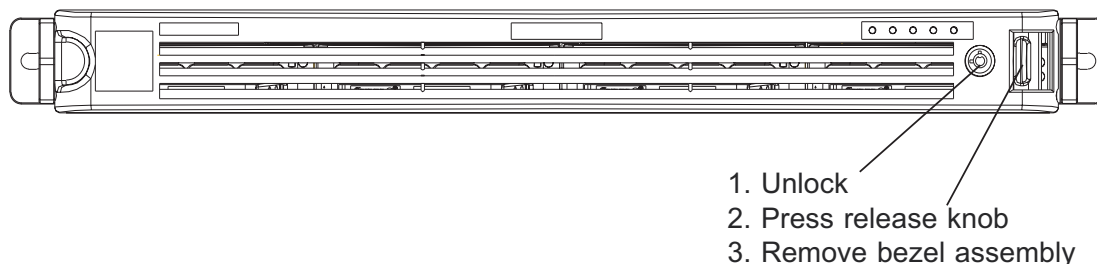
Accessing the Drive Bays

SATA Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace SATA drives. Proceed to the next section for instructions.

DVD-ROM/Floppy Disk Drives: For installing/removing a DVD-ROM or floppy disk drive, you will need to gain access to the inside of the 5015B-UR/5015B-U/5015B-NTR/5015B-NT by removing the top cover of the chassis. Proceed to the "DVD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

Note: Only "slim" DVD-ROM and floppy drives will fit into the 5015B-UR/5015B-U/5015B-NTR/5015B-NT.

Hard Drive Installation

The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays. For this reason, even empty carriers without drives installed must remain in the chassis.

Mounting a Hard Drive in a Drive Carrier

1. Insert a drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with six screws, as shown in Figure 6-4.
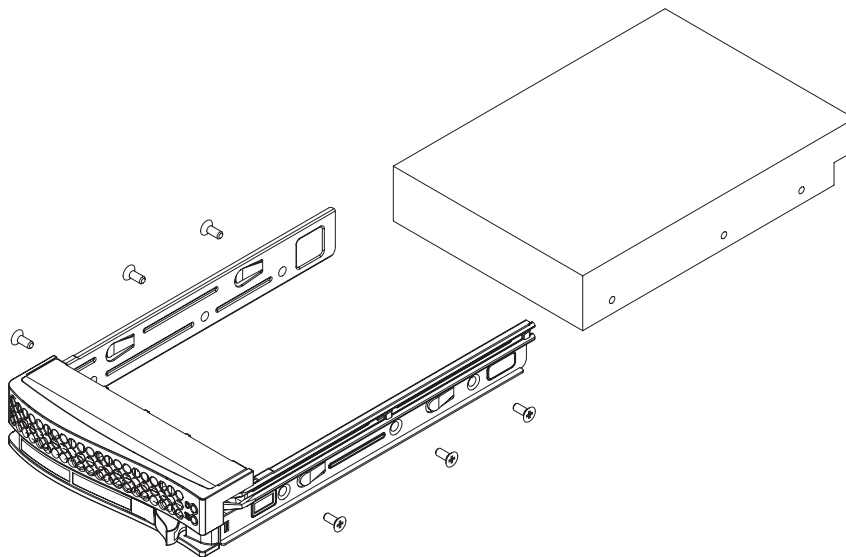
Figure 6-4. Mounting a Hard Drive in a Carrier

> ⚠ **Use caution when working around the SAS/SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.**

> ⚠ **Important: Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.**

Installing/Removing a Hard Drive

1. To remove a carrier, push the release button located beside the drive LEDs.

2. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

Note: Your operating system must have RAID support to enable the hot-plug capability of the hard drives.
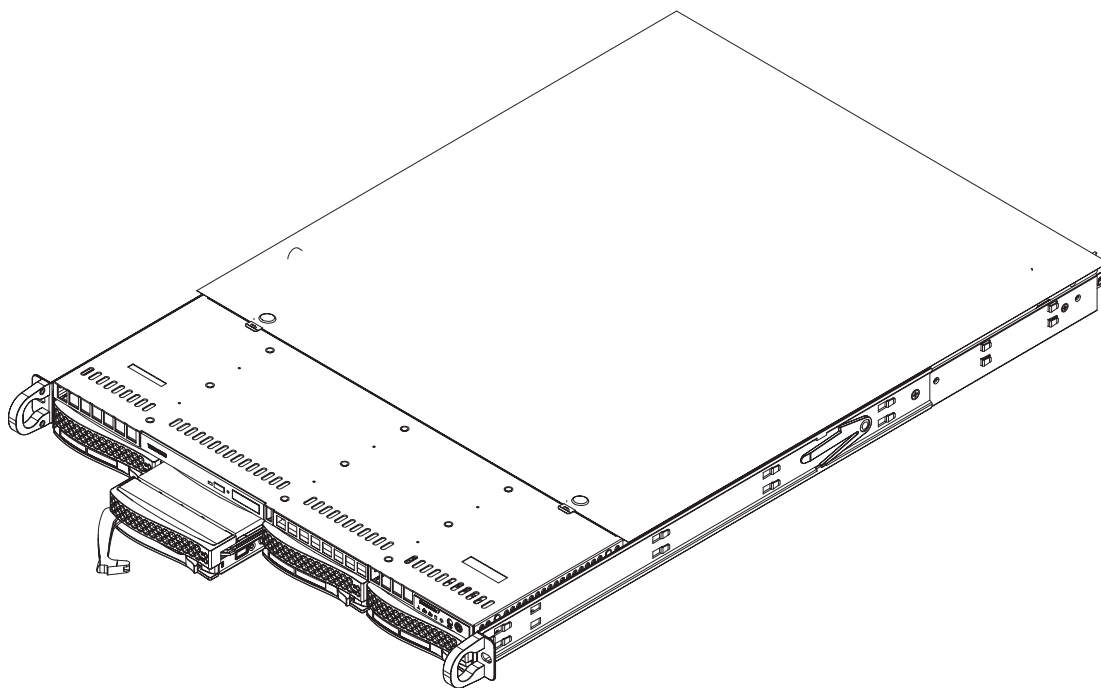
Figure 6-5. Removing a Hard Drive from the Server

DVD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the DVD-ROM and floppy drive bays. The 5015B-UR/5015B-U/5015B-NTR/5015B-NT accomodates only slim-line DVD-ROM drives. Side mounting brackets are needed to mount a slim-line DVD-ROM drive in the 5015B-UR/5015B-U/5015B-NTR/5015B-NT server. You must power down the system before installing or removing a floppy or DVD-ROM drive.

Removing the Chassis Cover

1. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").

2. Depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

Removing/Installing a Drive

1. With the chassis cover removed, unplug the power and data cables from the drive you want to remove.

2. Locate the locking tab at the rear of the drive. It will be on the left side of the drive when viewed from the front of the chassis.

3. Pull the tab away from the drive and push the drive unit out the front of the chassis.

4. Add a new drive by following this procedure in reverse order. You may hear a faint *click* of the locking tab when the drive is fully inserted.

5. Remember to reconnect the data and power cables to the drive before replacing the chassis cover and restoring power to the system.

Please be aware of the following:

*   The floppy disk drive cable has seven twisted wires.

*   A color mark on a cable typically designates the location of pin 1.

*   A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always

connects to drive A, and the connector that does not have twisted wires always connects to drive B.

6-5   Power Supply

5015B-UR/5015B-NTR

The SuperServer 5015B-UR/5015B-NTR has a 450 watt redundant power supply configuration consisting of two hot-swap power modules. The power supply modules have an auto-switching capability, which enables them to automatically sense and operate with a 100V - 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The Universal Information LED on the control panel will blink slowly and remain so until the failed module has been replaced. Replacement modules can be ordered directly from Supermicro (see contact information in the Preface). The power supply modules have a hot-swap capability, meaning you can replace the failed module without powering down the system.

Replacing the Power Supply

You do not need to shut down the system to replace a power supply module. The redundant feature will keep the system up and running while you replace the failed hot-swap module. Replace with the same model, which can be ordered directly from Supermicro (see Contact Information in the Preface).

1. First unplug the power cord from the failed power supply module.

2. To remove the failed power module, push the release tab (on the back of the power supply) to the side and then pull the module straight out (see Figure 6-6).

3. The power supply wiring was designed to detach automatically when the module is pulled from the chassis.

4. Replace the failed power module with another PWS-451-1R power supply module.

5. Simply push the new power supply module into the power bay until you hear a click.

6. Finish by plugging the AC power cord back into the module.

5015B-U/5015B-NT

The SuperServer 5015B-U/5015B-NT has a single 560 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate with a 100v - 240v input voltage.

Power Supply Failure

If the power supply module fails, the system will shut down and you will need to replace the module. Replacements can be ordered directly from Supermicro (see contact information in the Preface). As there is only one power supply module in the 5015B-U/5015B-NT, power must be completely removed from the server before removing and replacing the power supply for whatever reason.

Replacing the Power Supply

First turn the power switch on the control panel off, then unplug the power cord from the system. Replace with the same model (p/n PWS-561-1H20), which can be ordered directly from Supermicro (see Contact Information in the Preface).

1. Remove the screws that secure the power supply to the chassis then pull the module straight out with the handle provided (see Figure 6-6, redundant power supply server shown). The power supply wiring was designed to detach automatically when the module is pulled from the chassis.

2. Carefully insert the new power supply into the open bay and push it completely into the chassis until you hear a clicking sound, meaning it has been fully inserted.

3. Secure it to the chassis with the screw you removed previously, then reconnect the AC power cord and depress the power button on the control panel to restart the system.

Figure 6-6. Removing/Replacing the Power Supply
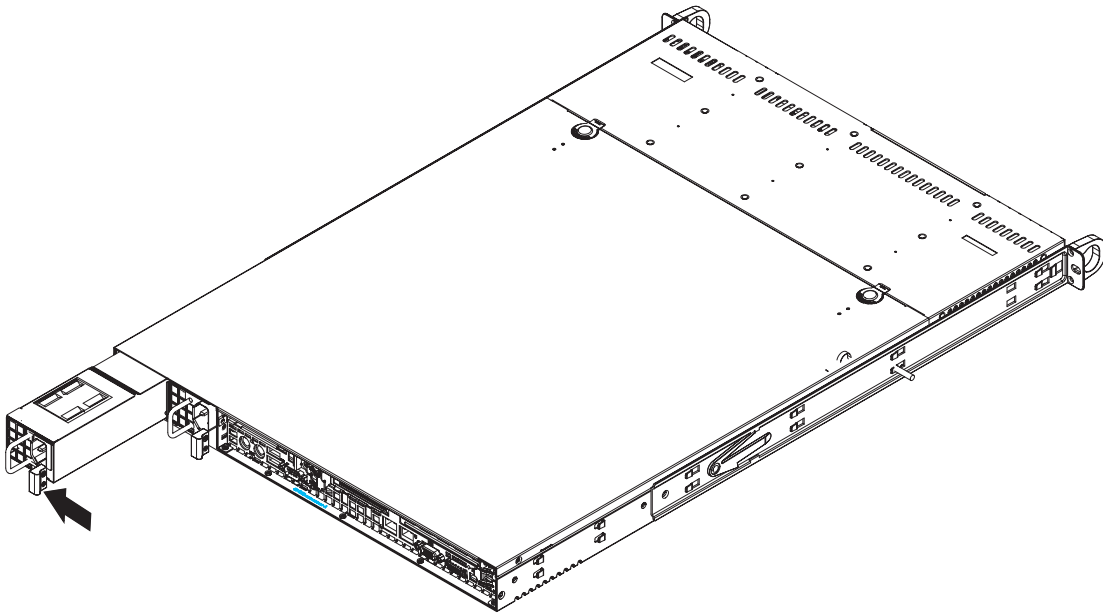
Notes

Chapter 7

BIOS

7-1   Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7SBU. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

Note: The SPI BIOS chip used in the X7SBU is not removable. To replace a damaged SPI BIOS chip, please send the motherboard to Supermicro for repair.

7-2   Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (See the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately acti-vated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1.   By pressing <Delete> immediately after turning the system on, or

2.   When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

7-3   Main BIOS Setup

All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the +/- arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu

```
        PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
  Main   Advanced   Security   Boot   Exit

                                                        Item Specific Help
     System Time:              [11:02:07]
     System Date:              [09-21-2007]
                                                   <Tab>, <Shift-Tab>, or
     Legacy Diskette A:        [1.44/1.25 MB  3½"]  <Enter> selects field.
     BIOS Date

     Hard Disk Pre-Delay:      [Disabled]
     Serial ATA:               [Enabled]
     Native Mode Operation:    [Auto]
     SATA RAID Enable          [Disabled]
     ICH Raid CodeBase         [Intel]
     SATA AHCI Enable          [Disabled]
     SATA AHCI Legacy Enable   [Disabled]

   ▶ IDE Channel 0 Master
     IDE Channel 0 Slave
   ▶ IDE Channel 1 Master
     IDE Channel 1 Slave
     SATA Port 2
     SATA Port 3
   ▶ Ext. Primary Master
   ▶ Ext. Primary Slave


  F1  Help   ↑↓ Select Item   -/+   Change Values    F9   Setup Defaults
  Esc Exit   ↔  Select Menu  Enter Select ▶ Sub-Menu  F10 Previous Values
```

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

BIOS Date

The item displays the date that the BIOS was built.

Hard Disk Pre-Delay

This setting allows the user to add a delay prior to the first access of a hard drive by the BIOS. The delay ensures that the hard disk has time to initialize before power up. The options are Enabled and **Disabled**.

Serial ATA

This setting allows the user to enable or disable the Serial ATA function. The options are Disabled and **Enabled**.

Native Mode Operation

Select Serial ATA to use the SATA mode, or select Auto to use the Native Mode for ATA. The options are: Serial ATA and **Auto**.

SATA RAID Enable

This setting allows the user to enable the Serial ATA RAID functions. The options are Enabled and **Disabled**.

SATA AHCI Enable

Select Enable to enable the Serial ATA Advanced Host Interface function. (This feature is for advanced programmers only.The Enhanced AHCI mode is available when the Windows XP-SP1 OS and the IAA driver is used.) The options are En- abled and **Disabled**.

SATA AHCI Legacy

Select Enable to use Legacy Mode for SATA Advanced Host Interfacing. When this feature is set to Enabled, SATA Port 5 and SATA Port 6 are disabled. (This feature is for advanced programmers only.) The options are Enabled and **Disabled**.

▶IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, SATA Port 2, SATA Port 3

These settings allow the user to set the parameters of IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, SATA Port 2 and SATA Port3 connections. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of an IDE/SATA device. Select **Auto** to allow the BIOS to automatically configure the parameters of the IDE/SATA device installed on a slot. Enter a number between 1 to 39 to select a predeter- mined IDE/SATA device. Select User to allow the user to enter the parameters of a HDD/SATA device installed. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

CHS Format

The following items will be displayed by the BIOS:

TYPE: This item displays the type of IDE drive.

Cylinders: This item indicates the number of cylinders detected by the BIOS.

Headers: This item indicates the number of headers.

Sectors: This item displays the number of sectors.

Maximum Capacity: This item displays the maximum storage capacity in the CHS Format.

LBA Format

The following items will be displayed by the BIOS:

Total Sectors: This item displays the number of total sectors available in the LBA format.

Maximum Capacity: This item displays the maximum capacity in the LBA format.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access a IDE Device via the LBA mode. The options are Enabled and **Disabled**.

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to configure the Ultra DMA Mode setting. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.

7-4   Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.

```
         PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
   Main   Advanced   Security   Boot   Exit

                                                          Item Specific Help
     ▶ Boot Features
     ▶ Advanced Processor Options                       Select Boot features
     ▶ Advanced Chipset Control
     ▶ Memory Cache
     ▶ PnP Configuration
     ▶ I/O Device Configuration
     ▶ DMI Event Logging
     ▶ Console Redirection
     ▶ Hardware Monitor
     ▶ IPMI








   F1  Help   ↑↓ Select Item   -/+    Change Values    F9   Setup Defaults
   Esc Exit   ↔ Select Menu    Enter Select ▶ Sub-Menu  F10  Previous Values
```

▶Boot Features

Access the submenu to make changes to the following settings.

Quiet Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

ACPI Mode

Select Yes to use the ACPI (Advanced Configuration and Power Interface) power management feature on your system. The options are **Yes** and No.

Power Button Behavior

If set to Instant-Off, the system will power on or power off immediately as soon as the user hits the power button. The options are **Instant-Off** and 4-Second Override.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

Resume On PME#

Select On to "wake your system up" from the PME# of PCI slots. The options are On and **Off**.

PS2 Keyboard (KB)/Mouse Wake Up

Select Enable to "wake your system up" from the S1 or S3 state. The default setting is **Disabled**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are **Default**, x6, x7, x8, x9, x10 and x11.

Frequency High Ratio (Available when supported by the CPU)

The feature allows the user to set high ratio internal frequency multiplier for Intel SpeedStep CPUs. The settings are **Default**, +6% to 11% and +12% to +27%. Note: if an incorrect ratio (one that is not supported by the CPU) is selected, the system may hang. If this happens, clear CMOS to recover the system.

Hyperthreading (Available when supported by the CPU)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

Core-Multi-Processing (Available when supported by the CPU)

Set to Enabled to use a processor's second core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled**.

Single Logical Processor Mode (Available when supported by the CPU)

This setting allows the user to choose the processor operation mode. Select **Disabled** to allow the processor to operate in single-core mode. Select Enabled to allow the processor to operate in multi-core mode.

Intel Enhanced Debug (Recommended for Maintenance)

This setting allows an operating-system level debug of issues that may be processor related. The options are **Enabled** and Disabled.

Machine Checking (Available when supported by the CPU)

Set to Enabled to activate the Machine Checking function, which allows the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are **Enabled** and Disabled.

Compatible FPU Code (Available when supported by the CPU)

Set to Enabled to keep the content of the last instruction Operating Code (OP Code) in the floating point (FP) state. The options are **Disabled** and Enabled.

Split Lock Operation

Set to Enabled to mask alignment check exceptions for split lock transactions. The options are Enabled and **Disabled**.

L3 Cache

Set to Enabled to enable the function of L3 Cache to optimize system and CPU performance. The options are **Enabled** and Disabled.

Thermal Management 2 (Available when supported by the CPU)

Set to **Enabled** to use Thermal Management 2 (TM2), which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Enabled** and Disabled.

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and Enabled.

Echo TPR

Set to Enabled to prevent xTPR messages from being sent to the system.The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are **Enabled** and Disabled. Note: please refer to Intel's web site for detailed information.

Intel Virtualization Technology (Available when supported by the CPU)

Select Enabled to use Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

No Execute Mode Memory Protection (Available when supported by the CPU and the OS)

Set to Enabled to enable an Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

Note: this feature is available when your OS and your CPU support the Execute Disable Bit function. The options are Disabled and **Enabled**. Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Enhanced Intel Speed Step Support (Available when supported by the CPU)

Select Enabled to use the Enhanced Intel SpeedStep Technology, which allows the system to automatically adjust processor voltage and core frequency in an

effort to reduce power consumption and heat dissipation. The default setting is **GV1/GV3**. Please refer to Intel's web site for detailed information.

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

> **Warning**: Use caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect DRAM timing may cause the system to become unstable. When this occurs, reset to the default settings.

▶Integrated Device Control

Memory Reclaiming

Use this setting to enable Memory Remapping above 4GB. The settings are **Enabled** and Disabled.

High Precision Event Time

Select Yes to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are Yes and **No**.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, **PCI** and LPC.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

USB Host Controller 1

This feature allows the user to configure the setting for USB Host Controller 1 Functions 0, 1, 2, 3, 7. The settings are **Enabled** and Disabled.

USB Host Controller 2

This feature allows the user to configure the setting for USB Host Controller 2 Functions 0, 1, 2, 7. The settings are **Enabled** and Disabled.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area of Block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into the L1/L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the base memory area of Block 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into the L1/L2/L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512K-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect and **Write Back**.

Cache E000-E3FF

Cache E400-E7FF

Cache E800-EBFF

Cache EC00-EFFF

Select Disabled to prevent data stored in the memory block specified from be-ing cached into the CPU cache or a buffer in the Static DROM. Select USWC Caching to use the Uncached, Speculative and Write Combined Mode for the data in the memory block specified. Select Write Through to allow data in the memory block specified to be cached into the CPU cache and written into the system memory at the same time. Select Write Protect to prevent data from be-ing written into the memory block specified. Select Write Back to allow the CPU to write data back directly from the buffer to the memory block specified without writing data to the system memory for fast CPU data processing and operation. The options are Disabled, USWC Caching, Write Through, **Write Protect** and Write Back.

▶PnP Configuration

Access the submenu to make changes to the following settings for Plug & Play devices.

▶PCI 32 Slot #1 - PCI Slot #2

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶PCI-Express x4 Slot 3

Access the submenu for each of the settings above to make changes to the following:

PCI Express Port #3

Select Enabled to always enable PCI-Exp. x4 Port #3. Select Disabled to always disable this port. (If PCI-E x1 Port #1 is disabled, PCI-Exp. x4 Port #3 will be disabled as well.) When set to Auto, PCI-Exp. x4 Port #3 will be enabled if a PCI add-on card is detected. The options are **Auto**, Enabled and Disabled.

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶PCI-Exp. x8 Slot 4

Access the submenu for each of the settings above to make changes to the following:

PCI Express Graphics Port

Select **Auto** to automatically enable the PCI-Express graphics port if a PCI add-on card is detected. Select Disabled to always disable this port or Enabled to always enable this port. (Debugging is enabled of a debug card is detected.)

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶Onboard LAN 1/Onboard LAN 2

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select clock frequency for the keyboard clock. The options are 6MHz, 8MHz, **12MHz** and 16MHz.

Serial Port A

This setting allows you to assign control of Serial Port A. The options are **Enabled** (user defined), Disabled and Auto (BIOS or OS controlled).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of Serial Port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of device that will be connected to Serial Port B. The options are **Normal** and IR (for an infrared device).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are 3F8, **2F8**, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are **IRQ3** and IRQ4.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled and Auto (BIOS or OS controlled).

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for the console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K and 115.2K.

Console Type

This item allows you to set the console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are None, XON/XOFF and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

This feature allows you to decide if you want to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitoring

CPU Temperature/System Temperature

Fan 1 - Fan 5

If the Auto Fan Control feature is enabled, the BIOS will automatically display the status of each fan as specified.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If the option is set to 3-pin fan, the fan speed is controlled by voltage. If the option is set to 4-pin, the fan speed will be controlled by Pulse Width Modulation (PWM). Select 3-pin if your chassis came with 3-pin fan headers. Select 4-pin if your chassis came with 4-pin fan headers. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disable to disable the fan speed control function to allow the onboard fans to constantly run at the full speed (12V). The Options are: **1. Disabled** and 2. Optimized Workstation w/4-pin.

Voltage Monitoring

The following items will be monitored and displayed:

Vcore A, MCH Core, VDIMM, +3.3V, +12V, +5Vsb, +5VDD, P_VTT and Vbat

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

7-5   Security Settings

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.

```
         PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
   Main    Advanced   Security   Boot   Exit

                                                    Item Specific Help
     Supervisor Password Is:
     User Password Is:

     Set Supervisor Password
     Set User Password

     Fixed disk boot sector:        [Normal]
     Password on boot:              [Disabled]














   F1   Help   ↑↓ Select Item    -/+   Change Values    F9   Setup Defaults
   Esc  Exit   ↔  Select Menu   Enter  Select ▶ Sub-Menu  F10  Previous Values
```
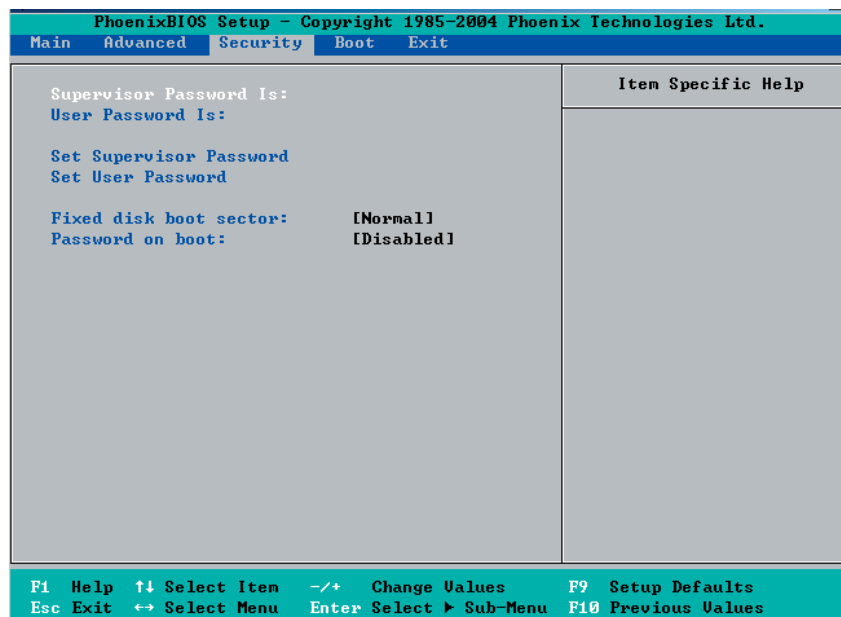
Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

Select **Normal** to enable the feature of Write-Protect to protect the boot sector on the hard drives from virus intrusion.

Password on Boot

When set to Enabled, a user will need to key-in a password to enter the system at system boot. The options are Enabled (password required) and **Disabled** (password not required).

7-6   TPM (Trusted Platform Modules) State

Choose the TPM State menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display. These settings are only available if the TPM Support Option is enabled in the Security Setting)

```
PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
 Main    Advanced    Security    TPM State    Physical Presence operations    Boot    [

                                              Item Specific Help
   Current TPM State:

   Change TPM State              [No Change   ]




















F1  Help   ↑↓ Select Item    -/+   Change Values    F9  Setup Defaults
Esc Exit   ←→ Select Menu    Enter Select ▶ Sub-Menu  F10 Previous Values
```
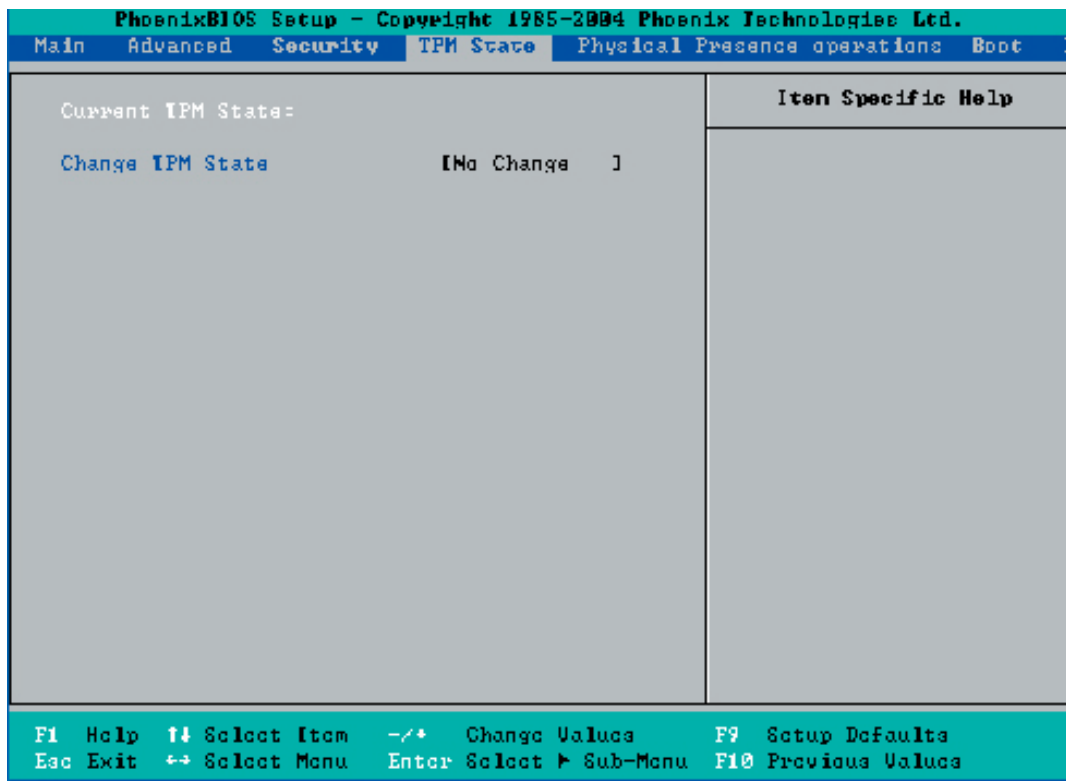
Current TPM State

This item shows the current TPM State only.

Change TPM State

Select "Enabled & Activate" to enable TPM support for the system. Select Deactivate & Disabled to disable tTPM support. If "No Change" is selected, no changes will be done to the current TPM State. Select Clear to clear or erase all information related to TPM support.

7-7 Physical Presence Operations

```
PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main   Advanced   Security   TPM State   Physical Presence operations   Boot

                                              Item Specific Help
 TPM configuration change was requested to
 State=

 NOTE=
 This action will switch on the TPM
 This action will switch off the TPM
 This action will clear and switch on the TPM

 WARNING!!!
 Doing so might prevent security applications
 that rely on the TPM from functioning
 as expected
 Clearing erases information stored on the TPM.
 You will lose all created keys and access to
 data encrypted by these keys.


 Reject
 Execute


 F1  Help   ↑↓ Select Item    -/+  Change Values    F9  Setup Defaults
 Esc Exit   ↔  Select Menu   Enter Select ► Sub-Menu  F10 Previous Values
```
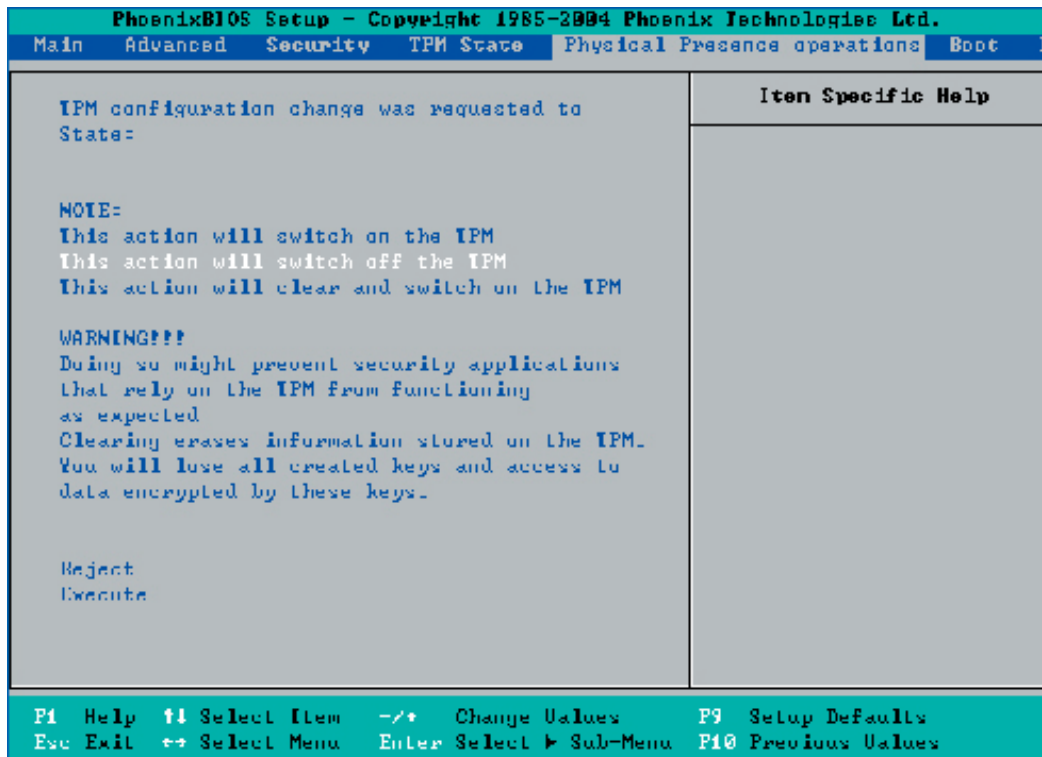
TPM Configuration was Requested to State:

If TPM Support is set to enabled, the Physical Presence Operations submenu will automatically display to indicate the current status of TPM Operations after system reboot. Choose from the following settings:

Select On to enable the functionality specified in the current status.

Select Off to disable the functionality specified in the current status.

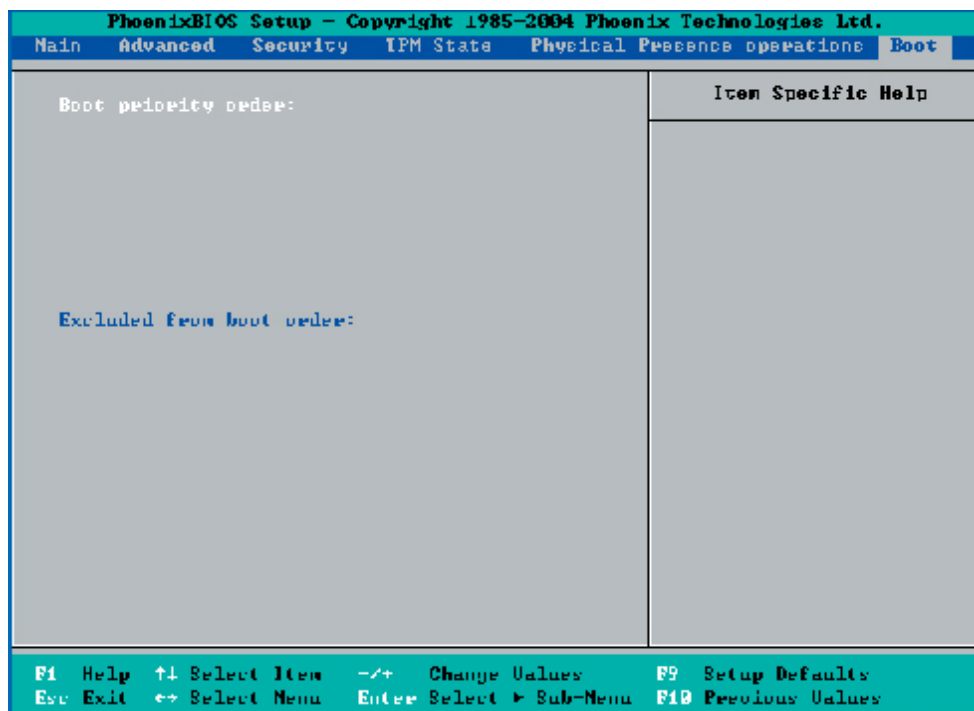Select Clear to erase all data related to current TPM settings from the system.

Select Reject to reject and abandon the settings specified in the current TPM Status.

Select Execute to allow the system to carry out and execute the settings indicated in the current TPM status. All information related to the TPM support will be erased.

7-8   Boot Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot settings are described in this section.
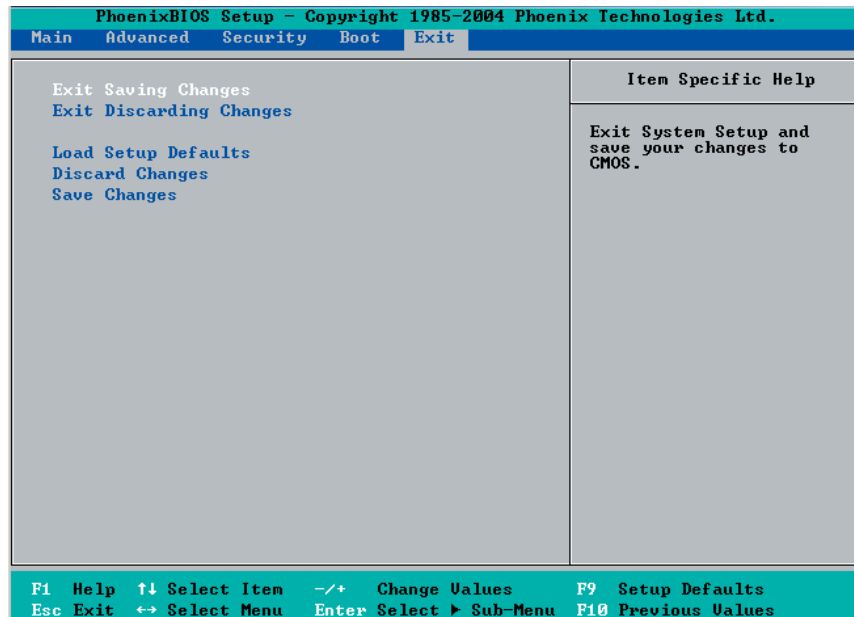
```
     PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
  Main    Advanced    Security    TPM State    Physical Presence operations   Boot   E

                                                      Item Specific Help
     Boot priority order:




     Excluded from boot order:










  F1   Help   ↑↓ Select Item    -/+   Change Values    F9   Setup Defaults
  Esc  Exit   ↔ Select Menu   Enter Select ▶ Sub-Menu  F10  Previous Values
```

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

7-9   Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.

```
            PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
   Main     Advanced    Security    Boot    Exit

                                                        Item Specific Help
      Exit Saving Changes
      Exit Discarding Changes
                                                   Exit System Setup and
      Load Setup Defaults                          save your changes to
      Discard Changes                              CMOS.
      Save Changes






   F1   Help   ↑↓ Select Item    -/+   Change Values    F9   Setup Defaults
   Esc  Exit   ↔ Select Menu     Enter Select ▶ Sub-Menu F10 Previous Values
```

Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

Notes

Appendix B

Installing the Windows OS

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1   Installing Windows XP/2000/2003 for RAID Systems

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.

5. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

6. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH9R" into Drive A: and press the <Enter> key.

7. Choose the Intel(R) ICH9R *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

9. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

10. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing Windows XP/2000/2003 for Non-RAID Systems

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.

5. Press the <Enter> key to proceed with the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

6. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then continue with the Windows XP/2000/2003 installation.

7. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

8. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Appendix C

System Specifications

Processors

Single Intel® Xeon® 3200/3000 Sequence processors at a front side (system) bus speed of 1600/1333/1066/800 MHz.

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Intel X48
ICH9R

BIOS

16 Mb Phoenix® Flash ROM

Memory Capacity

Four DIMM sockets supporting up to 8 GB of unbuffered non-ECC DDR3-1333, DDR3-1066 or DDR3-800 SDRAM or up to 4 GB of non-ECC DDR3-1600 XMP SDRAM in two DIMM slots

See the memory section in Chapter 5 for details.

SATA Controller

Intel ICH9R on-chip controller for six-port Serial ATA (RAID 0, 1 5 and 10 supported)

SATA Drive Bays

5015B-NTR/5015B-NT:
Four (4) hot-swap drive bays to house four (4) SATA drives
5015B-UR/5015B-U:
Four (4) hot-swap drive bays to house four (4) SAS/SATA drives (with optional UIO SAS controller card)

Peripheral Drive Bays

One (1) slim floppy drive (optional)
One (1) slim DVD-ROM drive

Expansion Slots (see Section 5-6 for details)

5015B-UR/5015B-U:

Right side: one PCI-E x8 card (maximum length of 5.5")

Left side: a UIO card and one PCI-E x8 card

5015B-NTR/5015B-NT:

Right side: one PCI-E x8 card (maximum length of 5.5")

Left side: two PCI-E x8 cards

Serverboard

X7SBU (Extended ATX form factor)

Dimensions: 8 x 13.05 in (203 x 331 mm)

Chassis

5015B-UR/5015B-NTR: SC815TQ-R450U Form Factor: 1U rackmount

5015B-U/5015B-NT: SC815TQ-560U Form Factor: 1U rackmount

Dimensions: (WxHxD) 17 x 1.7 x 25.6 in. (432 x 43 x 650 mm)

Weight

5015B-UR/5015B-NTR: Gross (Bare Bone): 43 lbs. (19.5 kg.)

5015B-U/5015B-NT: Gross (Bare Bone): 41 lbs. (18.6 kg.)

System Cooling

Three or four (depending on model) 4-cm heavy-duty counter-rotating fans

System Input Requirements

5015B-UR/5015B-NTR:

AC Input Voltage: 100-240 VAC

Rated Input Current: 6.3A (115V) to 3.24A (230V)

Rated Input Frequency: 50-60 Hz

5015B-U/5015B-NT:

AC Input Voltage: 100-240 VAC

Rated Input Current: 8A (115V) to 4A (230V)

Rated Input Frequency: 50-60 Hz

Power Supply

5015B-UR/5015B-NTR

Rated Output Power: 450W (Model# PWS-451-1R)

Rated Output Voltages: +3.3V (25A), +12V (37A), -12V (0.6A), +5V (25A), +5Vsb (3A)

5015B-U/5015B-NT

Rated Output Power: 560W (Model# PWS-561-1H20)

Rated Output Voltages: +3.3V (21A), +12V (43.6A), -12V (0.6A), +5V (25A), +5Vsb (3A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:

FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity:

EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:

EN 60950/IEC 60950-Compliant, UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

Notes